

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) An electric circuit breaker for protecting an electrical circuit against excessive current loads, comprising:

- a switch to be arranged in said electrical circuit ;
- a triggering device for causing said switch to break said electrical circuit in response to a tripping signal ;
- a receiver for receiving and storing a programmable current threshold command that identifies a programmed first current threshold;
- a first current detector for detecting a current level in said electrical circuit;
- a processor for generating said tripping signal depending on said stored programmable current threshold command and said detected current level; ~~and~~
- a second current detector for causing said switch to break said electrical circuit if a current flowing in said electrical circuit exceeds a predetermined rated current for more than a specified duration; and
- said receiver storing a second current threshold higher than said programmed current threshold,
- said specified duration being a first duration, predetermined or programmed, if said detected current level is above said programmed current threshold and below said second current threshold, and a second duration, predetermined or programmed, and shorter than said first duration if said detected current level is above said second current threshold.

2. (previously presented) The electric circuit breaker according to claim 1, said second current detector comprising:

- a thermal current level detection element; and
- means for causing said switch to break said electrical circuit if said thermal current level detection element exceeds a temperature threshold.

3. (previously presented) The electric circuit breaker according to claim 1, said second current detector comprising:

- electromagnetic current level detection means including a coil; and
- means for causing said switch to break said electrical circuit if a magnetic force generated by said coil exceeds a threshold.

4. (previously presented) The electric circuit breaker according to claim 1, said second current detector comprising:

- a thermal current level detection means for thermally detecting an amount of current flowing in said electrical circuit;
- means for causing said switch to break said electrical circuit if said thermal current level detection means exceeds a temperature threshold determining the rated current of said electrical circuit breaker;
- electromagnetic current level detection means including a coil for generating a magnetic force in accordance with the amount of current flowing in said electrical circuit; and
- means for causing said switch means to break said electrical circuit if said magnetic force generated by said coil exceeds a force threshold;

- said electromagnetic current detection means and said thermal current level detection means being dimensioned such that an electrical current level corresponding to said force threshold is higher than said rated electrical current level.

5. (previously presented) The electric circuit breaker according to claim 1, wherein:

- said switch comprises a mechanical interruption element in series with a solid state interruption element;
- said second current detector is configured to cause said switch to break said electrical circuit if a current flowing in said electrical circuit exceeds a predetermined rated current is arranged to trip said mechanical interruption element; and
- said triggering device is configured to cause said switch to break said electrical circuit in response to a tripping signal is arranged to trip said solid state interruption element.

6. (previously presented) The circuit breaker according to claim 1, wherein said triggering device, said second current detector, and said switch are integrated into a single unit.

7. (previously presented) The electric circuit breaker (1) according to claim 1, wherein said first current detector comprises:

- means for converting an electrical current flowing in said electrical circuit into a voltage; and
- means for detecting said voltage and outputting a corresponding current level detection signal.

8. (previously presented) The electric circuit breaker according to claim 7, wherein said first current detector comprises a shunt impedance or an arrangement of coils magnetically coupled to constitute a transformer or a hall effect device or a magnetoresistor or a Rogosky coil.

9. (previously presented) The electric circuit breaker according to claim 1, wherein said processor is adapted to generate said tripping signal after said detected current level has continuously exceeded said programmed current threshold for a specified duration.

10. (previously presented) The electric circuit breaker according to claim 9, wherein said specified duration is programmed to depend on the detected level of current in said electric circuit.

11. (previously presented) The electric circuit breaker according to claim 9, wherein the receiver is configured to receive and store a command which specifies said duration.

12. Canceled.

13. (currently amended) The electric circuit breaker according to claim ~~1~~21, comprising:

- means to receive a second current threshold command;
- ~~said second current threshold storing means~~ receiver being adapted to store said second current threshold in accordance with said received second current threshold command.

14. (currently amended) The electric circuit breaker according to claim ~~1~~21, wherein:

- said programmable current threshold is lower than said rated current level; and
- said second current threshold is lower than the current level corresponding to said force threshold.

15. (previously presented) The electric circuit breaker according to claim 9, wherein said processor is configured to:

- provide a plurality of functional relations each specifying for a plurality of current levels a respective associated duration; and
- select one of said functional relations in accordance with said current threshold command.

16. (currently amended) The electric circuit breaker according to claim 15, wherein said functional relations are stored in said ~~processing means processor~~ in the form of tables or in the form of software routines for calculating said functional relations.

17. (previously presented) The electric circuit breaker according to claim 1, comprising means for receiving a circuit close command; and means for operating said switch to close the electrical circuit in response to said circuit close command.

18. (previously presented) The electric circuit breaker according to claim 1, comprising means for receiving a circuit interrupt command; and means for operating said switch to break said electrical circuit in response to said circuit interrupt command.

19. (previously presented) The electric circuit breaker according to claim 1, comprising a

powerline communication receiver for receiving said commands via a public electric power line which feeds said electric circuit through said switch.

20. (previously presented) The circuit breaker according to claim 1, wherein:

- said triggering device comprises a coil for electro magnetically driving a movable member and an auxiliary switch connected in series with said coil;
- said switch and said auxiliary switch being mechanically coupled with said movable member for actuation thereby;
- a displacement required for opening said auxiliary switch being larger than a displacement required for opening said switch.

21. (previously presented) An electricity meter for measuring the amount of energy supplied to an electricity consumer through an electric circuit, comprising an electric circuit breaker according to claim 1.

22. (previously presented) The electricity meter according to claim 21, comprising:

- means for multiplying said detected current level with a supply voltage of said electrical circuit in order to obtain a measure for the instantaneous active and reactive power levels supplied to said electric circuit; and
- means for integrating said obtained instantaneous power levels over time in order to obtain the active and reactive energy supplied to said electrical circuit.

23. (previously presented) An electricity distribution network, comprising:

- at least one electrical power plant for generating electrical power to be distributed to a plurality of consumers;
- an electrical power distribution network for distributing the power generated by said at least one power plant to said consumers; and
- a plurality of electric circuit breakers according to any one of the claim 1 and/or a plurality of electricity meters according to claim 21.

24. (previously presented) The electricity distribution network according to claim 23, comprising administration and control facilities for monitoring load conditions in said power distribution network, and for generating at least one of said commands for said electric circuit breakers in accordance with said monitored load conditions.

25. (previously presented) The electricity distribution network according to claim 24, comprising

- a plurality of primary substations arranged between high voltage portions and medium voltage portions of said electricity distribution network;
- a plurality of secondary substations arranged between medium voltage portions and low voltage portions of said electricity distribution network;
- a communication receiver arranged at at least one of said secondary substations for receiving commands from said administration and control facilities, and for generating said current threshold commands and/or circuit close commands and/or circuit interrupt commands in accordance with commands received from said administration and control facilities;
- a power line communication device for injecting said commands generated by said

communication receiver into a low voltage portion of said electricity distribution network for transmission to at least one of said electricity consumers;

- said administration and control facilities and said communication being arranged to communicate with each other via a public telephone network.

26. (previously presented) The electricity distribution network according to claim 25, wherein said public telephone network is a wireless mobile telephone network.